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Chief Economist Complex

The Middle of the Pyramid: Dynamics of the Middle Class in Africa¹

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Some Key Messages of the Study

- Strong economic growth in the past two decades has helped reduce poverty in Africa and increased the size of the middle class.
- By 2010, the middle class had risen to 34% of Africa's population²—or nearly 350 million people—up from about 126 million or 27% in 1980, 27% in 1990 and about 220 million people or 27% in 2000. This represents a growth rate of 3.1% in the middle class population over the period 1980 to 2010, compared with a growth rate of 2.6% in the continent's overall population over the same period.
- About 60% of Africa's middle class, approximately 180 million people, remain barely out of the poor category. They are in a vulnerable position and face the constant possibility of dropping back into the poor category in the event of any exogenous shocks.
- The ICP results of 2005 show that per capita expenditure among Africa's middle class has increased almost two-fold, compared to more marginal increases in other regional economies in the developed countries. Consumer spending in Africa, primarily by the middle class, reached an estimated \$680 billion in annual expenditures in 2008 - or nearly a quarter of Africa's GDP based on 2008 purchasing power parity.
- Africa's middle class is a key source for private sector growth in Africa, accounting for much of the effective demand for goods and services supplied by private sector entities.

1 Introduction

1.1 Empirical evidence shows that growth of the middle class is associated with better governance, economic growth and poverty reduction. It appears that as people gain middle class status, they are likely to use their greater economic clout to demand more accountable governments. This includes pressing for the rule of law, property rights and a higher quantity and quality of public services.

1.2 Strong economic growth in Africa over the past two decades has been accompanied by the emergence of a sizeable middle class and a significant reduction in poverty. Also rising strongly has been a robust growth in consumption expenditures as a result of this growing middle class. Consumption in the continent now stands close to a third of Developing European countries.

1.3 Fostering the growth of the middle class should be of primary interest to policy makers. The middle class is a strong medium and long term development indicator, partly because its growth is strongly associated with faster poverty reduction. In a region with a substantial number of the world's poor, this association provides an opportunity for countries in the region to translate the recent impressive growth into even greater poverty reduction by harnessing appropriate policies.

1.4 The brief addresses the implications of Africa's growing middle class for the African economy and for poverty reduction in the region. In particular, it argues that the middle class may hold the key to a rebalancing of African economies towards more dependency

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² The total African population considered, by linear extrapolation of the results of the study population sample.

on domestic demand and away from a heavy reliance on exports, as well as to greater and more efficient poverty reduction and inclusive growth. It presents evidence based on research and studies of 45 African countries.

2 Definitional Issues, Data Sources and the Methodological Approach for the Study

What is the Middle Class?

2.1 The middle class can be defined in relative or absolute terms. In relative terms, the middle class is defined as individuals or households that fall between the 20th and 80th percentile of the consumption distribution or between 0.75 and 1.25 times median per capita income, respectively³. Using the absolute approach, the middle class is usually defined as individuals with annual income exceeding \$3,900 in purchasing power parity (PPP) terms⁴ or with daily per capita expenditure between \$2 to \$4 and those with daily per capita expenditures between \$6 and \$10⁵.

2.2 The middle class is widely acknowledged to be Africa's future, the group that is crucial to the continent's economic and political development. But it is difficult to define exactly who falls into this key group and even harder still to establish how many middle class people there are in Africa. Recent estimates put the size of the middle class in the region in the neighborhood of 300 to 500 million people, representing the population that is between Africa's vast poor and the continent's few elite. Africa's emerging middle class comprises roughly the size of the middle class in India or China⁶.

2.3 It is also argued that Africa's middle class is strongest in countries that have

robust and growing private sectors⁷. Africa's middle class is not only crucial for economic growth but is also essential for the growth of democracy.

Definition of the Middle Class in the Context of this Study

2.4 This brief uses an absolute definition of per capita daily consumption of \$2-\$20 in 2005 PPP US dollars to characterize the middle class in Africa. The study provides three sub-categories of the middle class. The first sub-category is that of the "floating class" with per capita consumption levels of between \$2-\$4 per day. Individuals at this level of consumption, which is only slightly above the developing-world poverty line of \$2 per person per day (the second poverty line) used in some studies⁸, remain largely vulnerable to slipping back into poverty in the event of some exogenous shocks. This category is crucial because it is a hinge between the poor and lower middle class category. This class is vulnerable and unstable, but it reflects the direction of change in population structure through time. The second sub-category is that of the "lower-middle" class with per capita consumption levels of \$4-\$10 per day. This group lives above the subsistence level and is able to save and consume non essential goods. The third sub-category is the "upper-middle class" with per capita consumption levels of \$10-\$20 per day.

Data Sources

2.5 A variety of data sources were used to create the population distributions and determine the size of the African middle class (section 3). For African countries, the primary source for the distribution data was obtained from the World Bank's PovcalNet database, which provides detailed distributions of either income or household consumption

expenditures by different percentiles based on actual household survey data. In addition, PovcalNet provides information on mean household per capita income or consumption levels in 2005 PPP dollars.

2.6 The database primarily provides sample distributions based on consumption except in instances in which only income measures exist. At lower income levels, the difference between consumption and income is small. But this difference tends to grow with wealth and thus should be considered a potential measurement error in the analysis. Still we expect that these differences are relatively minor as there is a high correlation between income and consumption especially at lower levels and thus should have little effect on overall computations. We also focus on consumption as it better captures individual welfare and is less prone to fluctuations caused by negative and positive shocks.

2.7 The data used in the identification of the characteristics of the middle class (section 4) was obtained mainly from the AfDB Data Platform database and other international sources.

Methodological Approach⁹

2.8 The tabulated distributions and their means are used to generate a Lorenz curve for each country to show the share of income for each proportion of the population. The line of equality depicts a situation of perfect equality in a society where a given proportion of the society would have an equally given proportion of the income. The extreme opposite would be where an individual would have all the income while everyone else has none. The Lorenz curve is normally used to represent inequality in the distribution of income among the population. The further the curve is away from the line of equality, the more unequal the income distribution is in a

³ Birdsall et al, 2000.

⁴ Bhalla, 2009.

⁵ Banerjee and Duflo, 2007.

⁶ Mahajan, 2009.

⁷ Ramachandran, 2009.

⁸ See Ravillion, Chen, and Sangraula, 2008.

⁹ See Box 2 in the Appendices for more details on the methodological approach.

society. The Gini coefficient, also measures levels of inequality, and is derived from the Lorenz curve. It represents the proportion of the area between the line of equality and the Lorenz curve and the total area above and below the Lorenz curve. The literature on the estimation of Lorenz curves provides a number of different functional forms. Two of the best performers among them are the general quadratic (GQ) Lorenz curve¹⁰ and what may be called the Beta Lorenz curve¹¹. There is some evidence for Indonesia that the Beta model yields somewhat more accurate predictions of the Lorenz ordinates at the lower end of the distribution, though the same study found that the GQ model is more accurate over the whole distribution¹². The GQ model, however, does have one comparative advantage over the Beta model, namely, that it is computationally simpler¹³.

2.9 This study therefore uses the Beta approach for estimating the various points of

the Lorenz curve showing the proportion of the population and their share of national income (see Box 2 in Appendices). Using a system of six equations, each representing a trapezoid-shaped area under the Lorenz curve for a series of coordinates, we obtain three unique values representing the proportions of the population associated with per capita daily income levels \$4, \$10 and \$20 (see chart 20 in Appendices). These represent the “floating class”, “lower-middle” and the “high-middle” class categories defined by this study.

3 Africa’s Emerging Middle Class

3.1 The results of this study reveal that Africa’s middle class has increased in size and purchasing power as strong economic growth in the past two decades has helped reduce poverty significantly and lift previously poor households into the middle class. By

2010, the middle class (included floating class) had risen to 34.3% of the population—or nearly 326 million people—up from about 115 million or 26.2% in 1980, 157 million or 27% in 1990 and 204 million or 27.2% in 2000 (Chart 1).

3.2 In the 1980s and early 1990s, the recruitment into the middle class resulted in a small percentage of poor households becoming better off and entering the middle class. This trend accelerated slightly during the period 2000 to 2010 when more poor households moved into the middle class. At the same time, the 2000s witnessed a recruitment process from the rich class into the middle class, implying some slight improvement in income inequality. However, income inequality in Africa remains very high. About 100,000 Africans had a net worth of \$800 billion in 2008 or about 60% of Africa’s GDP or 80% of sub-Saharan Africa’s¹⁴.

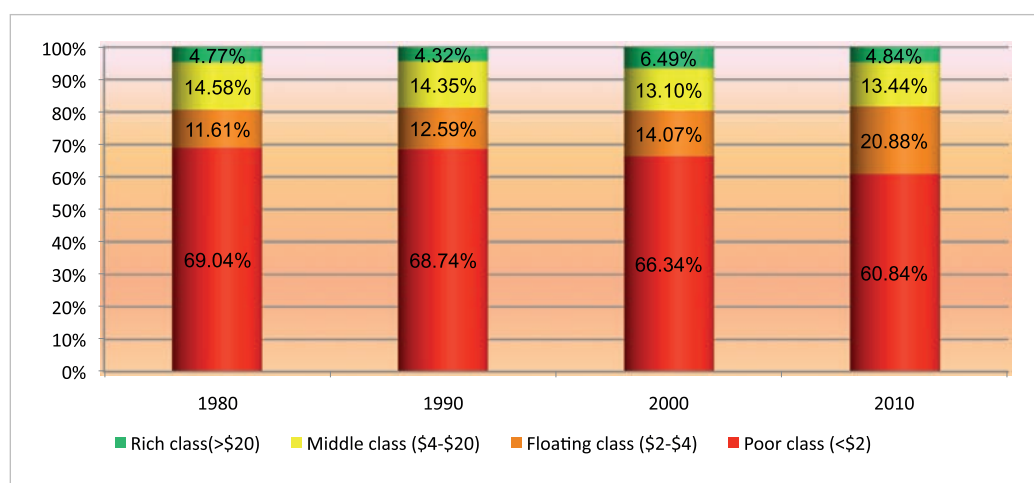
Table 1: Summary of Middle Class in Africa by Sub-Classes

Year	Floating class* in thousands	Lower-Middle** in thousands	Upper-Middle*** in thousands	Middle Class without floating class in thousands	% of population	Middle Class with floating class in thousands	% of population
1980	51,132	41,443	22,770	64,213	14.6	115,346	26.2
1990	73,591	53,425	30,512	83,937	14.4	157,529	27.0
2000	105,874	60,499	38,076	98,575	13.1	204,449	27.2
2010	198,739	83,189	44,735	127,924	13.4	326,664	34.3

Source: AfDB Statistics Department estimates.

*Floating class (\$2-\$4), ** Lower-middle class (\$4-\$10), *** Upper-middle class (\$10-\$20).

Chart 1: Distribution of the African Population by Classes



¹⁰ Villasenor and Arnold 1984, 1989.

¹¹ Kakwani, 1980.

¹² Ravallion and Huppi, 1990.

¹³ Datt, 1998.

¹⁴ World Wealth Report 2009, Merrill Lynch.

3.3 Africa's middle class is characterized by a high concentration in the lower ranks with per capita expenditure levels of \$2-\$4 per day, thus putting many of these households in a vulnerable position and facing the possibility of dropping back into the poor category in the event of any exogenous shocks (Charts 2 & 3). The results of this study show that about 21% of Africa's population falls in this category and remain barely above the poverty line. This represents about 216 million people. A stricter definition of the middle class using a minimum threshold of \$4 per day therefore yields a middle class population of about 138

million people in Africa¹⁵. This middle class group is much further removed from the poverty lines of \$1.25 and \$2, and is therefore much more stable and sustainable. The results of the 2005 International Comparison Program managed by AfDB actually show that per capita expenditure among Africa's middle class has increased almost two-fold, compared to more marginal increases in all other regional economies in the developed countries.

3.4 It is worth noting that some 61% of Africa's population falls below the \$2 poverty

line and 44% below the \$1.25 poverty line (see Charts 1 & 2). Access to employment and income generating opportunities could help such households to move up into the lower middle class levels. However, when remittances from the diaspora, which ordinarily go to households with per capita income levels of less than \$4 per day, are taken into account, a sizeable segment of this poor group is likely to move into the lower middle class category of \$4 per day, thus making the estimate of 300 million for Africa's middle class population more plausible.

Chart 2: Distribution of the African Population by Subclasses

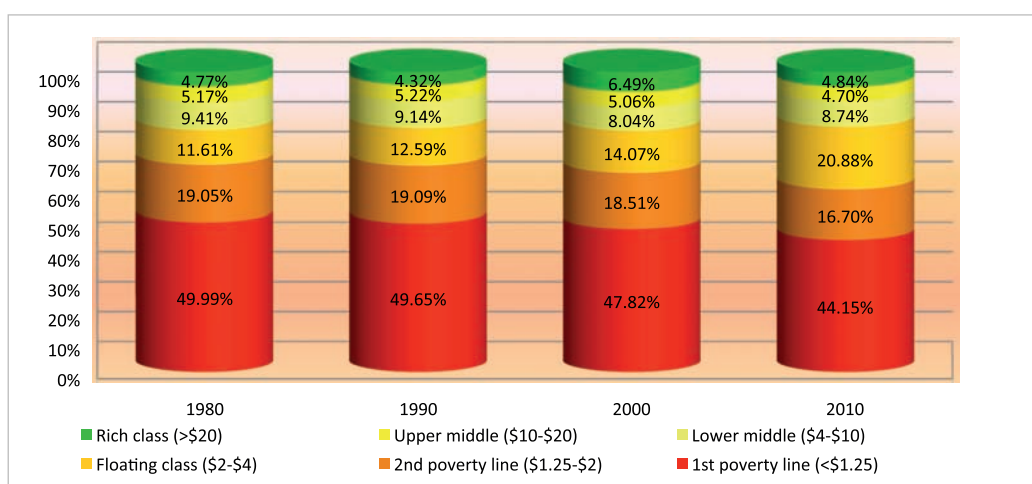
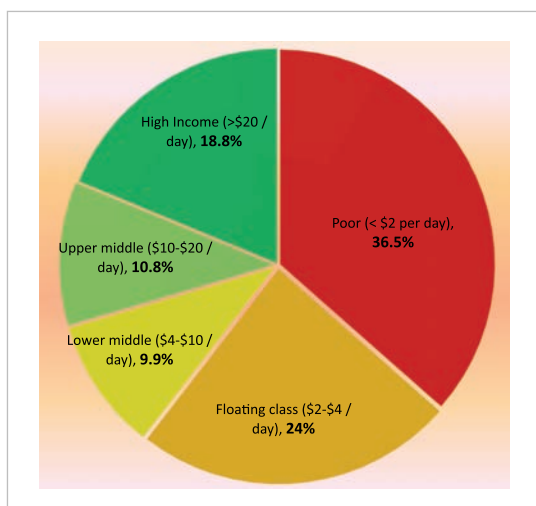
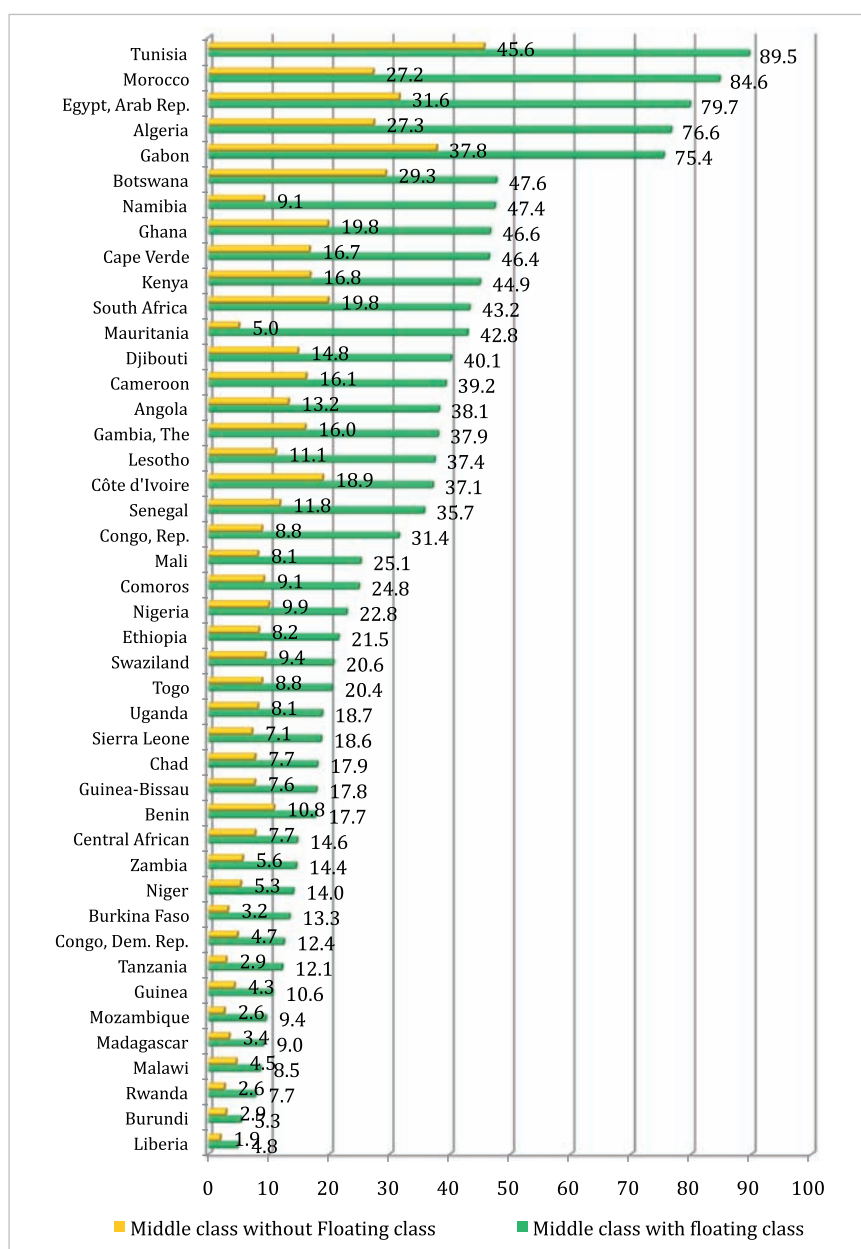


Chart 3: Africa - Population Distribution by Income, in 2010



¹⁵ On the basis of extrapolation across Africa (53 countries) in 2010.

Chart 4: Size of Middle Classes in Total Population in 2010



3.5 Chart 4 and Table 4 show the asymmetric distribution of the middle class by its subclasses. The floating class of \$2-\$4 per day represents the largest concentration of the middle class population. This situation is almost universal for all African countries. Although there is evidence of noticeable recruitment from the poor category to the floating class, there has not been much transition of this class into the stable middle class category of \$4-\$20 (see Charts 1 and 2), which is less vulnerable to economic shocks. This presents policy makers with the

challenge of not only stabilizing this floating class but also ensuring its transition into a stable middle class.

3.6 North African countries have a much higher concentration of the middle class among their population with Tunisia having the highest at 89.5% followed by Morocco and Egypt at 84.6% and 79.7% respectively (Chart 4, Table 4). However, a significant number of this middle class belong to the floating category, living on less than \$4 per day with the ever present danger of falling

into poverty in the event of exogenous economic shocks. This is evident in the Tunisian situation where approximately half of the middle class is in this situation. The case of Mauritania is another one. Although nearly 43% of the population is classified as middle class, only 5% are considered stable with income levels of over \$4 per day. The same situation applies in the three most populous countries in Africa, Nigeria, Ethiopia and Egypt where more than half of the middle class is in the floating category, living on less than \$4 per day.

4 The Middle Class and Their Characteristics: A Profile

4.1 Consumption or income levels capture only one dimension of the middle class characteristics. Other variables such as education, professions, aspirations and lifestyle are also important features that help to establish who is in the middle class.

4.2 In terms of residence, middle class households tend to reside in bigger and more permanent dwellings equipped with modern amenities. In terms of asset ownership, the middle class is typically associated with the widespread ownership

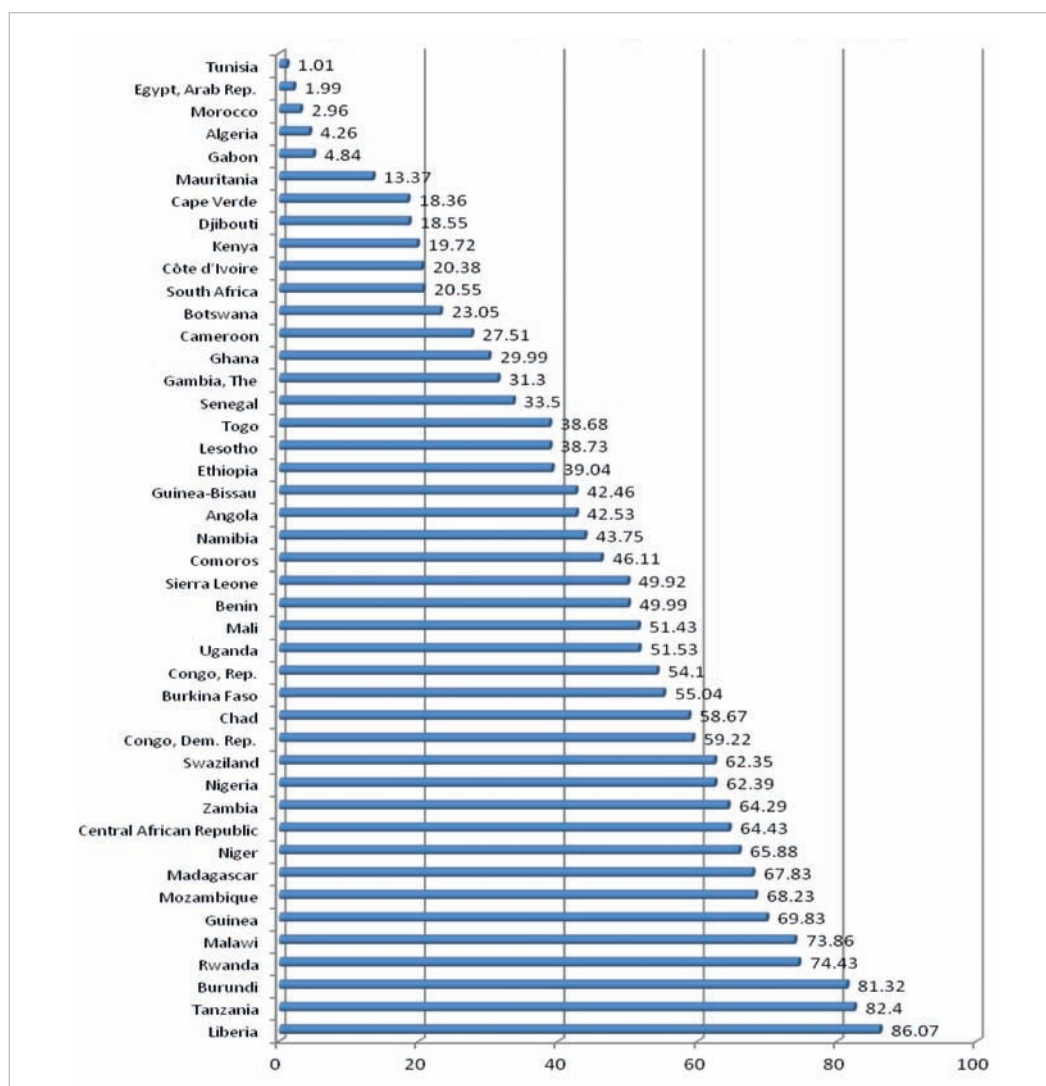
of major household durable goods such as refrigerators, telephones and automobiles. Middle class individuals are also much more likely to have salaried jobs and tend to have smaller family sizes.¹⁶

4.3 There are a number of characteristics that differentiate Africa's middle class from the poor and the rich. The vast majority of Africa's middle class is likely not to derive its income from agricultural and rural economic activities. As such, they are less likely to be farmers or land owners or manual laborers. The middle class is more likely to have salaried jobs or to have small businesses. They tend not to rely entirely on public health services and seek more expensive medical

care when ill. The middle class also tend to have fewer children than their poor counterparts and they spend more on the nutrition and schooling of their children. The middle class is also better educated, and more geographically concentrated in urban areas or along the coasts.

4.4 The rise in class status is largely correlated with a rise in progressive values that are highly conducive to strong economic growth. In particular, the middle class are more likely to have values aligned with greater market competition and better governance, greater gender equality, more investment in higher education, science and technology than those of the poor.

Chart 5: Proportion of People Living under \$1.25/day (%)



¹⁶ Asian Development Bank, 2010.

4.5 Poverty rates have been decreasing in many parts of the world, but the number of people living below the international poverty line remains high, especially in Sub-Saharan Africa. Our estimates of the size of the middle class show the inverse relationship between the size of the middle class and that of poor people (Charts 5 & 20). Countries with high middle class populations have fewer poor people and vice versa. On the other hand, our results also show very high correlation between middle class size and the GNI per capita (Chart 19). Countries with higher GNI per capita levels tend to have higher middle class sizes.

4.6 Banerjee and Duflo (2008) argue that what often separates the 'middle class' (which they define as living on between \$2

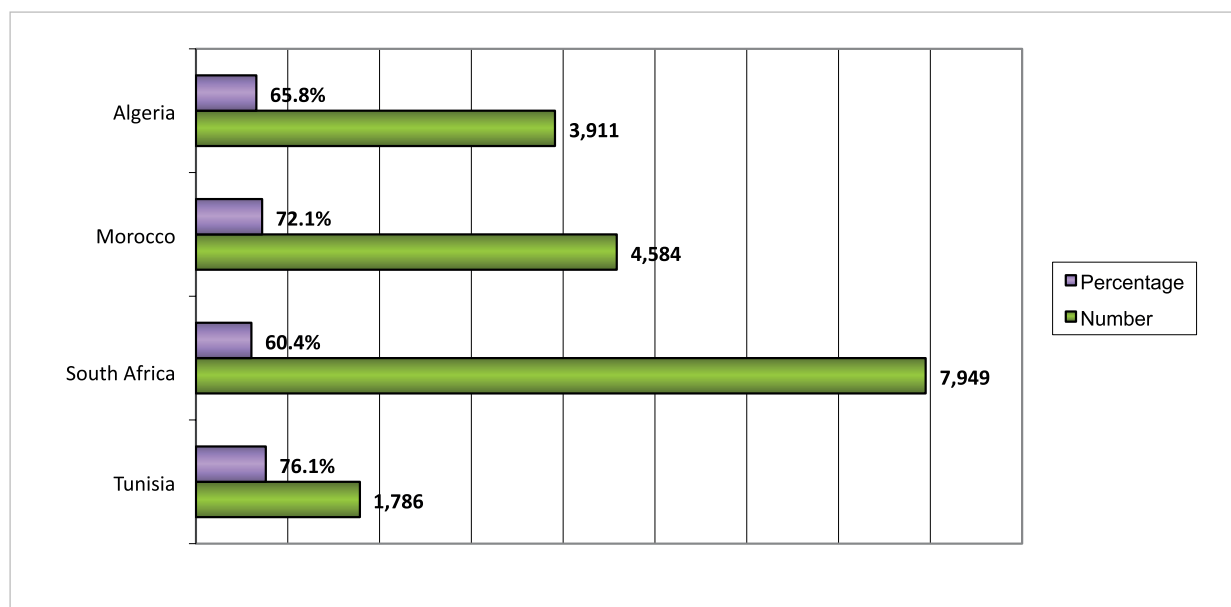
and \$10 per day) from the poor in developing countries are steady well-paying jobs, not greater success at running small businesses. However, the structure of subclasses of the middle class shows that the floating class (between \$ 2 and \$4 per day) dominates the middle class and that the structure is not balanced (Chart 18). This leaves the ever present risk of relapsing into poverty in the event of a shock.

4.7 A growing middle class in Africa requires housing, but political and economic instability often contribute to shortages¹⁶. However, financing home purchases is difficult in a number of African countries. In recent times mortgage markets have been on a rise across Africa and this development is a reflection of the middle class opportunity. Data on homeownership is not

available in the majority of African countries. Chart 6 below shows the percentage of households who occupy their own houses in selected countries.

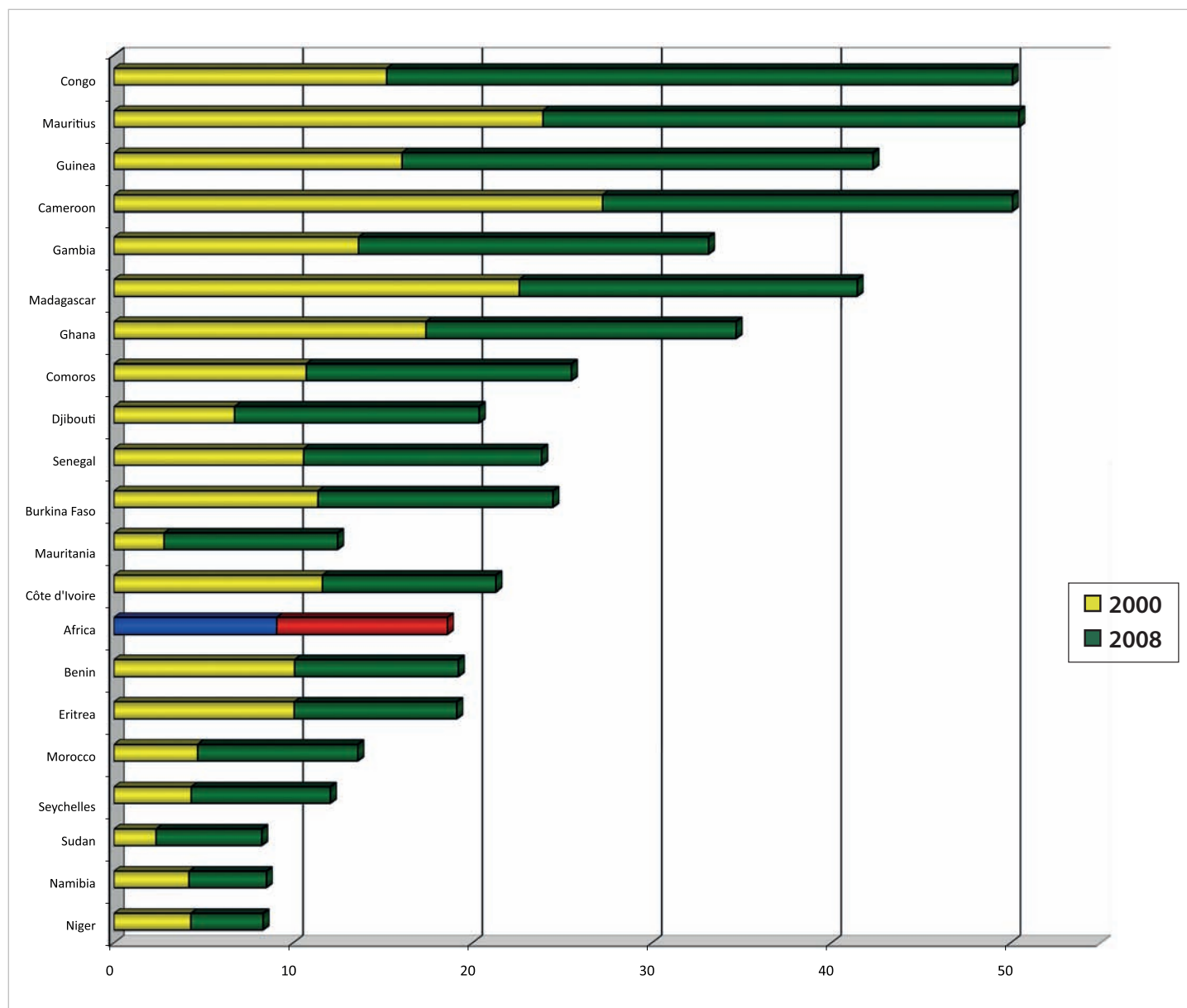
4.8 Human capital investment in education and health also rises as affluence increases. There is a high likelihood among the middle class to send their children to school. In countries where public schools are seen not to provide good education, private schools provide an alternative option especially for the middle and upper classes. School enrolments in private schools at pre-primary, primary and secondary levels indicate noticeable high school enrolments in private schools in quite a number of countries, which may indicate the existence of a strong middle class in these countries (see Charts 7 & 8).

Chart 6: Own occupier households 2008 (Number in thousands and percentage of total)



¹⁷ YaleGlobal, 2007.

Chart 7: Private enrolments in Primary (%)



4.9 The middle class is also more likely to seek better health care for themselves and their families than is the case for the poor.

4.10 The number of internet users, which can be used as a proxy for middle class lifestyles, has increased from about 4.5 million people in 2000 to 80.6 million people in 2008. Nigeria with about 24 million users accounts for the highest followed by Egypt with about 13.6 million users in 2008. Countries that have the lowest internet users are Equatorial Guinea and Sierra Leone with

about 12,000 and 13,900 people, respectively. In terms of internet users per 100 people, this has risen from 0.6 in 2000 to 8.8 in 2008, with Seychelles registering the highest at 39 people and Sierra Leone the lowest at 0.3 in 2008.

4.11 Subscription to fixed broadband internet is another indicator of interest that may be attributed to the middle class. At the continental level, the subscription has risen from 0.1 subscribers per 1,000 persons in 2003 to 4.1 subscribers per 1,000 persons in 2009. A number of countries (Algeria,

Cape Verde, Mauritius, Morocco, Sao Tome & Principe, Seychelles and Tunisia) have recorded substantial numbers of subscribers between 2003 and 2009 (see Chart 9).

4.12 Vehicle ownership is also associated with lifestyles of the middle class. Although data on vehicle ownership are very scanty across countries, trends for countries where data are available show an increase in vehicle ownership – an indication of more people attaining middle class status (see Charts 10 & 11 below).

Chart 8: Percentage of private enrolment in Secondary (%)

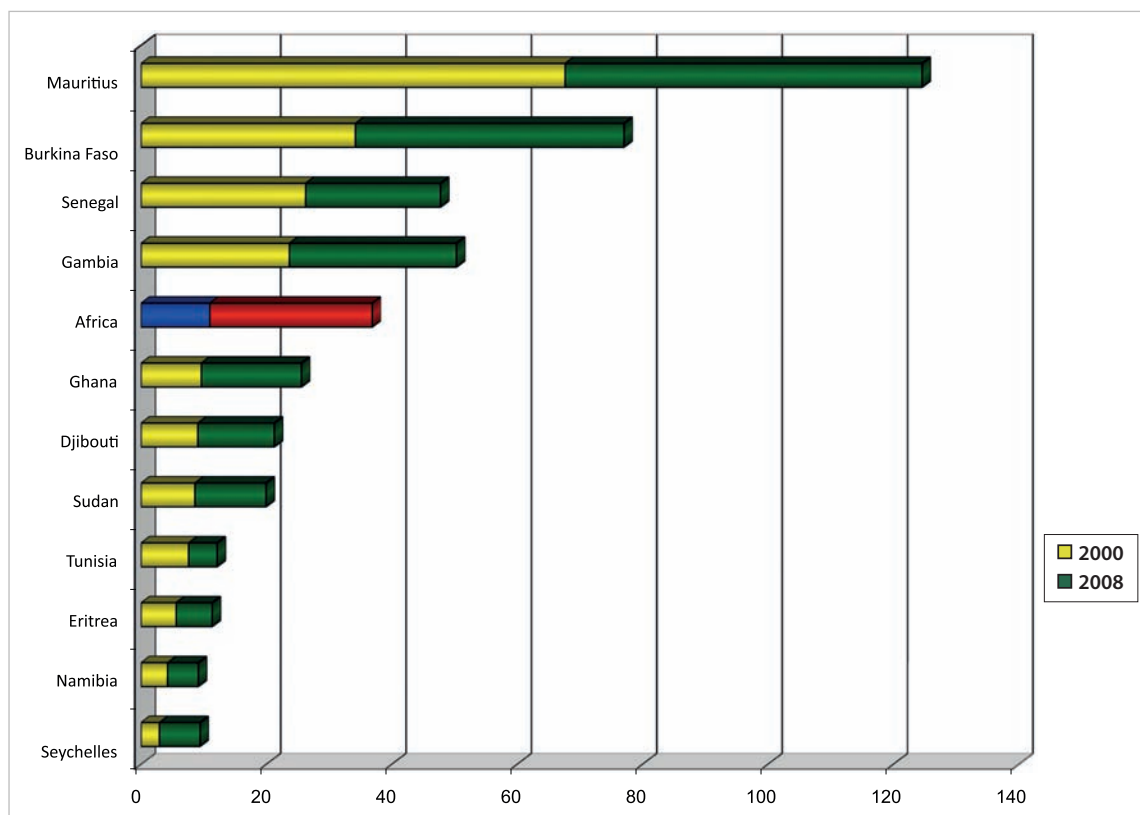


Chart 9: Fixed broadband internet subscribers per 1000 people

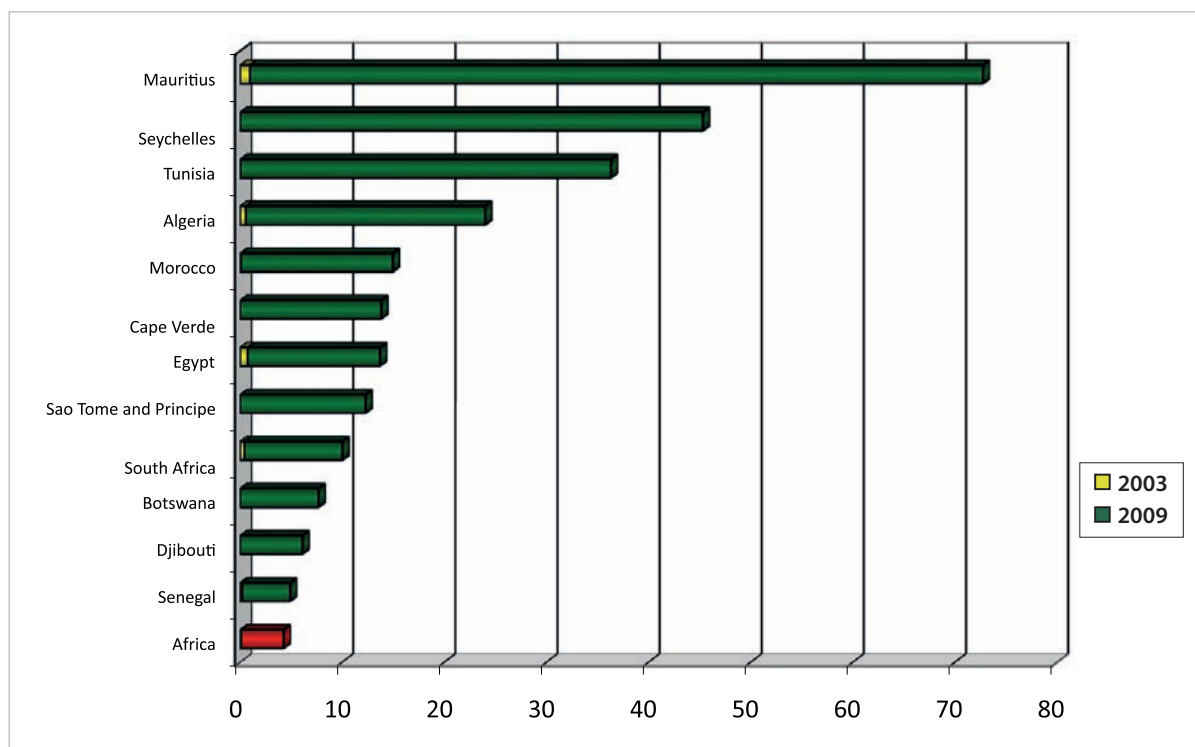


Chart 10: Motor vehicles per 1,000 people

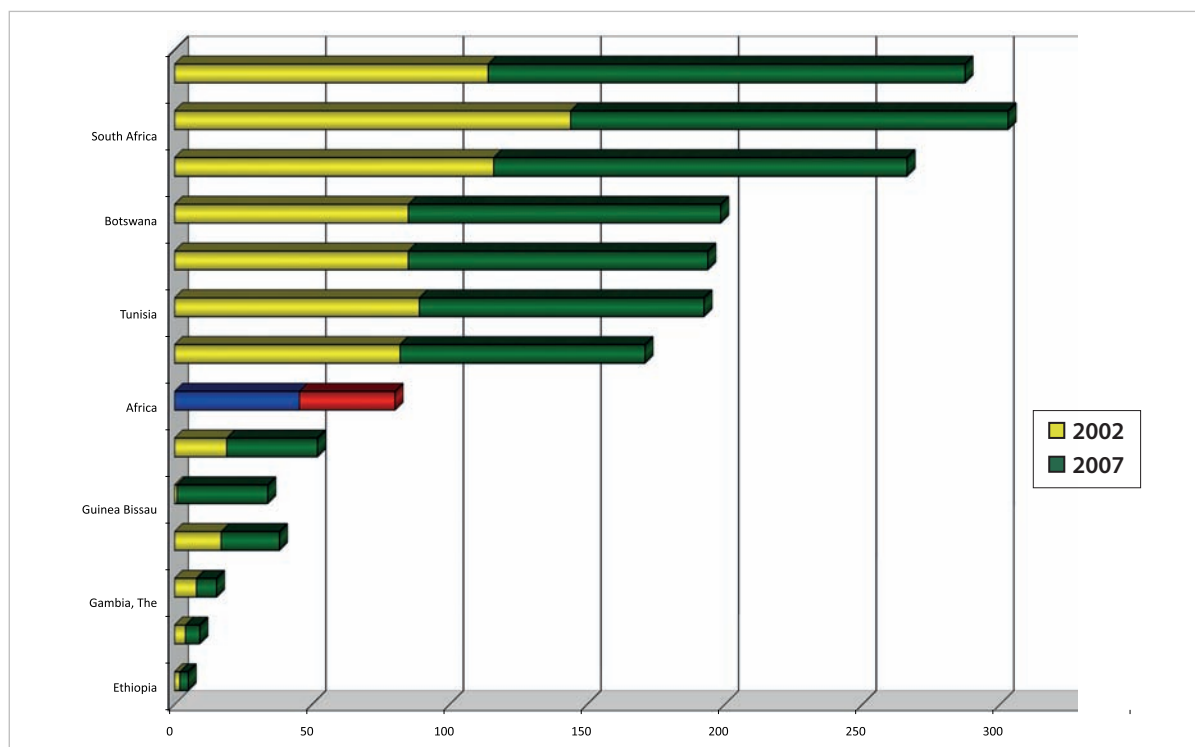
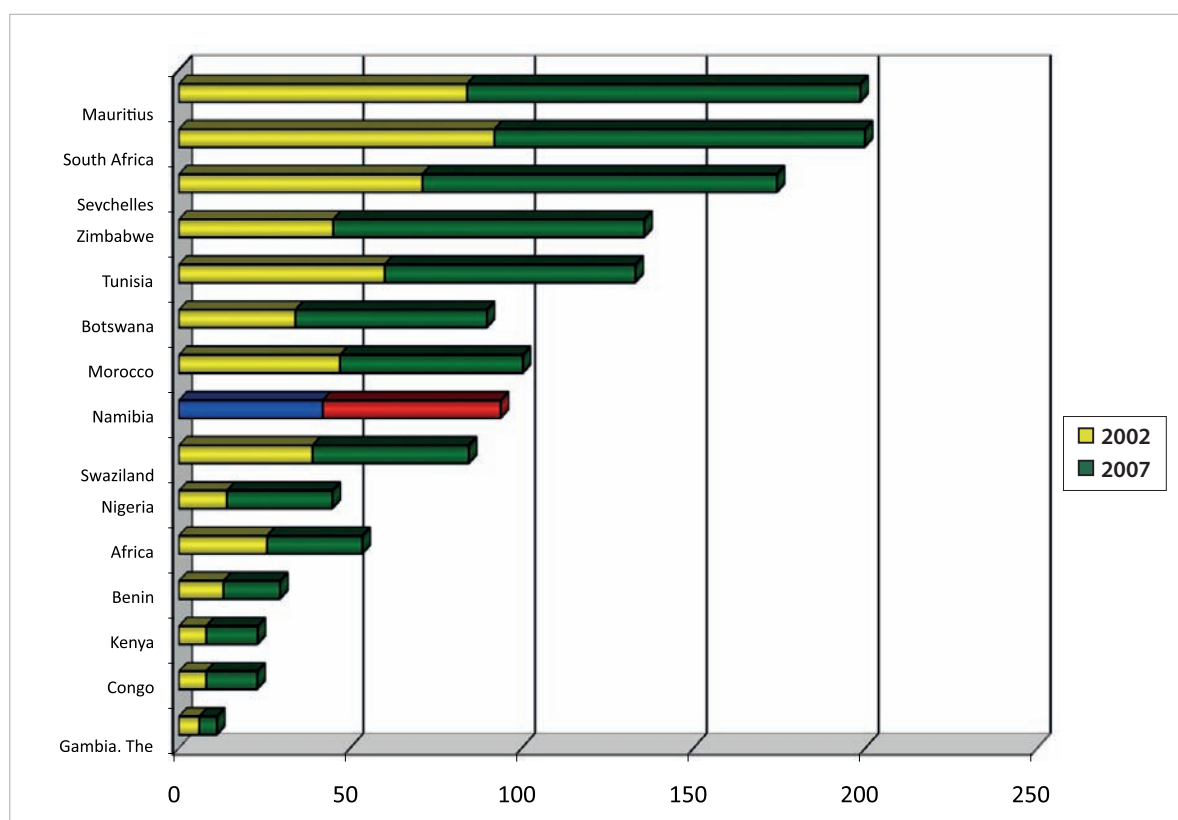


Chart 11: Passenger cars per 1,000 people



4.13 Consumption of petroleum products as indicated in Charts 12 and 13 for selected countries is another indicator that may provide an indication of the middle class as it is also associated with car ownership. Total petroleum consumption in Africa has increased three-folds from 1.5 million barrels

per day in 1980 to 3.2 million barrels per day in 2009.

4.14 Access to electricity for households use is yet another aspect of the living standards associated with middle class status. There has been a noticeable increase in total electricity

consumption from 170.1 million kilowatt-hours in 1980 to 513.8 million kilowatt-hours in 2007. Electricity consumption per household increased by 15 percent from 2,386 kilowatt-hours in 1980 to 2,740 kilowatt-hours in 2007 (see Charts 14 & 15) indicating an increase in the number of users or households who may be classified as middle class.

Chart 12: Total Consumption of Petroleum Products (Thousand Barrels Per Day)

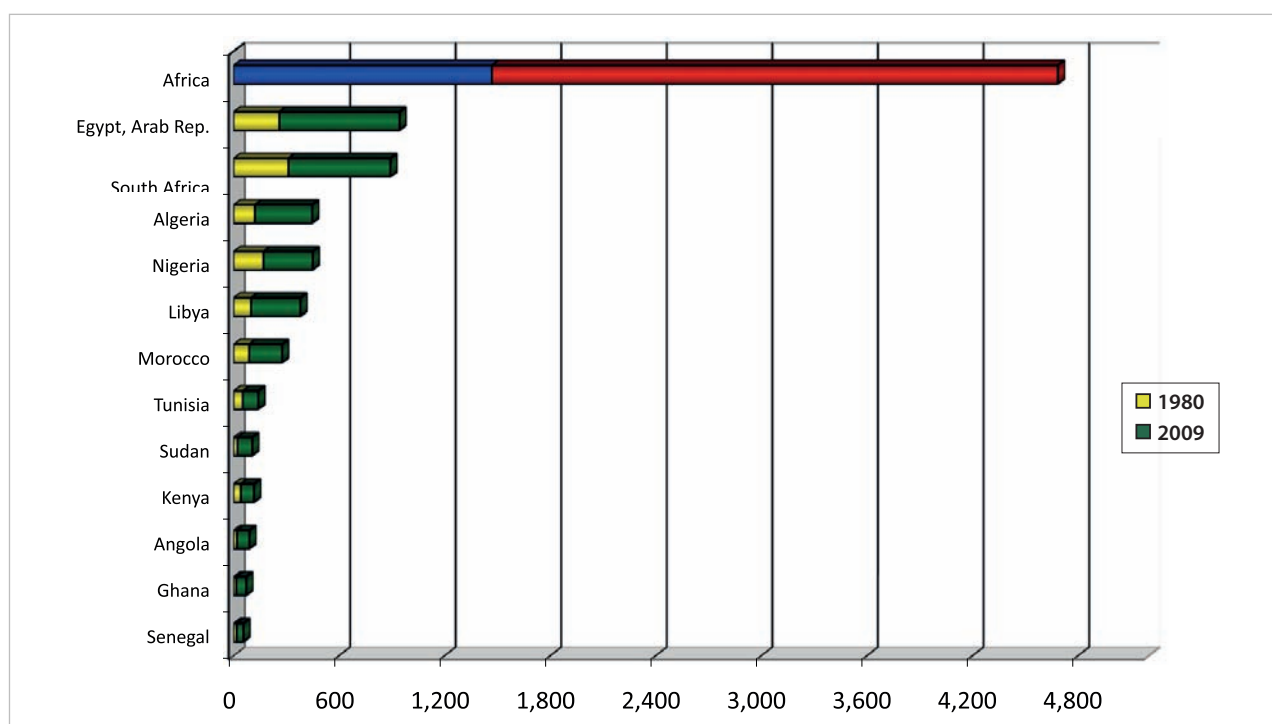


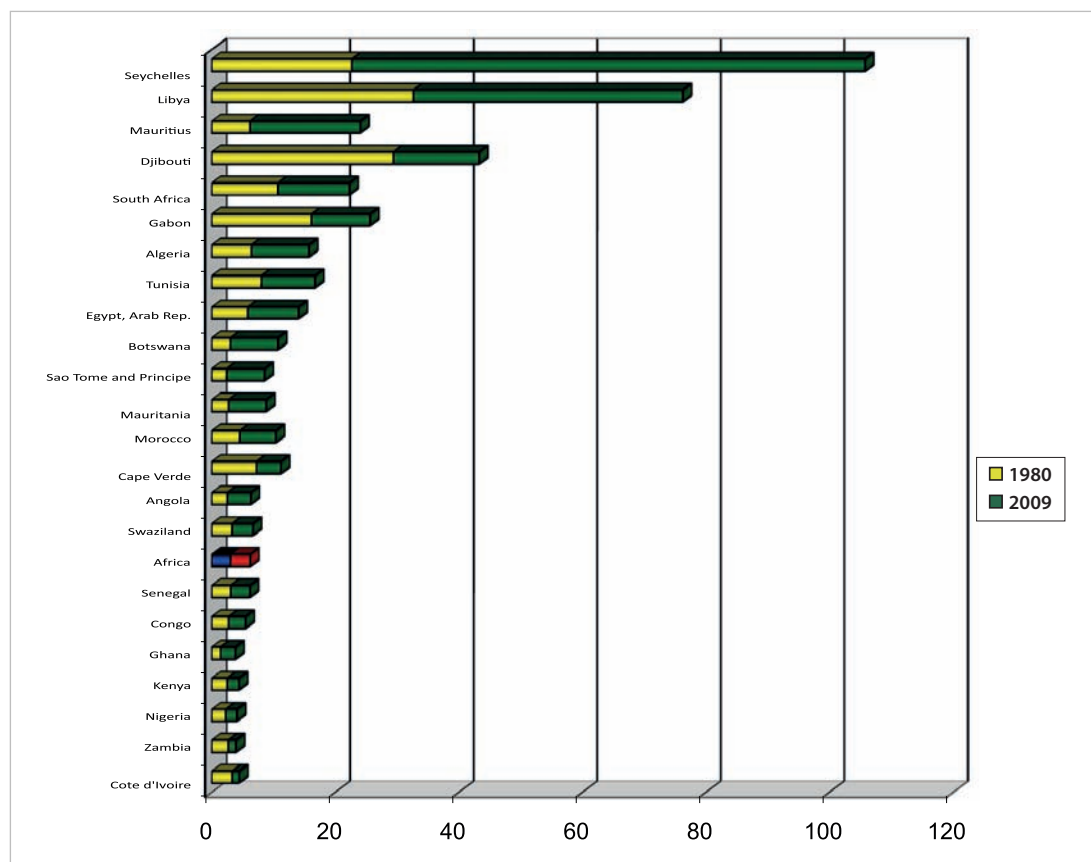
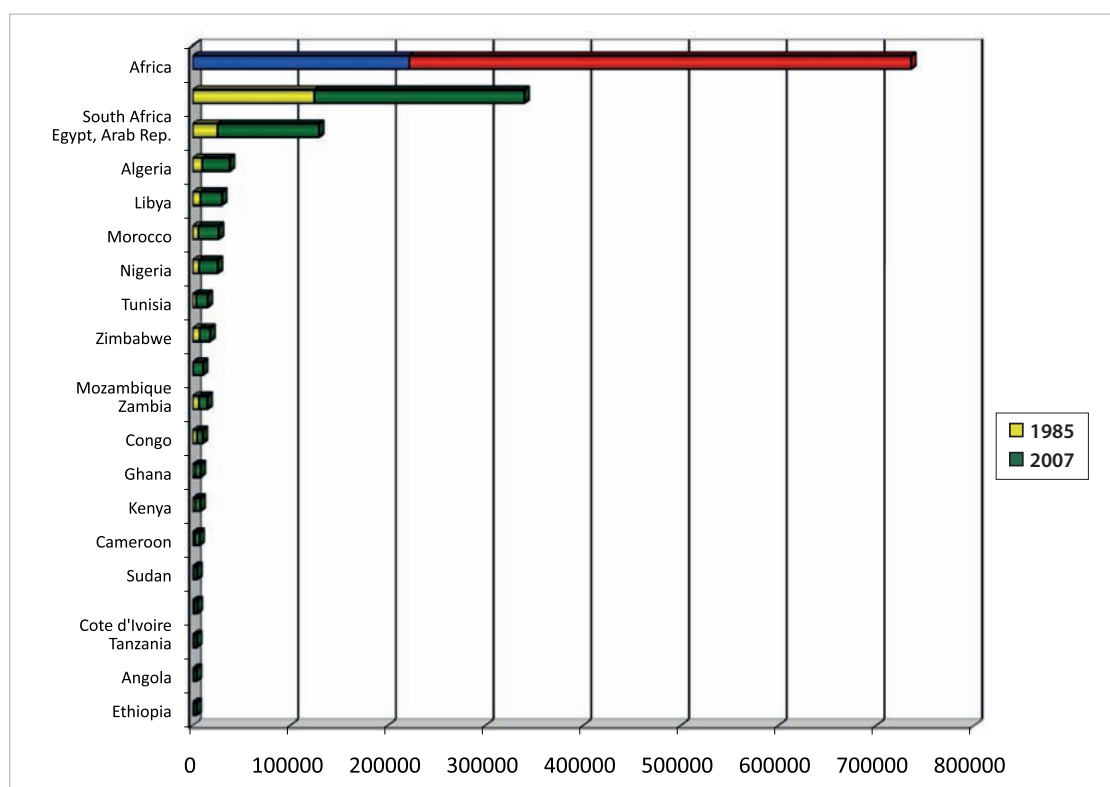
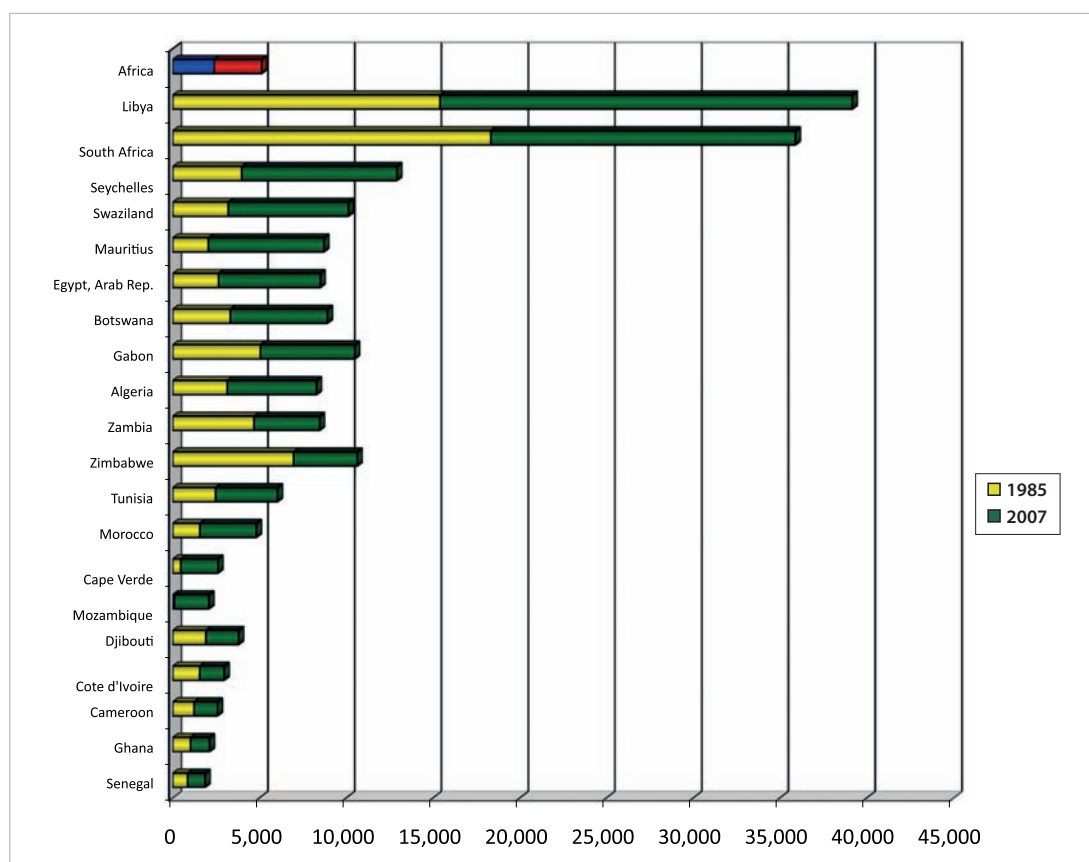
Chart 13: Total Consumption of Petroleum Products Per Capita (Thousand Barrels Per Day)**Chart 14: Total Electricity Net Consumption (Million Kilowatt hours)**

Chart 15: Total Electricity Net Consumption Per Household (Kilowatthours)



Box 1: Stylized Profiles of the Middle Class in Selected African Countries

Below are some profiles of the middle class in selected African countries based on a series of quotations and articles on Africa's middle class, focusing on the millions of Africans who make up the center of the continent's economic and social pyramid.¹

Liberia: Rebuilding the middle class

Liberian authorities believe that the country does not have a strong middle class yet. It is, however, viewed that the middle class in Liberia is composed of university graduates and entrepreneurs running small and medium businesses. The Liberian government seem to be optimistic about rebuilding the middle class, as the country's large diaspora increasingly sees the signs of stability needed for a healthy economy to function, and trickles back home, strengthening Liberia's return to peace.²

Sierra Leone: Professionals make progress after civil war

Sierra Leone has a small but growing middle class. The growth of Sierra Leone's middle class was thwarted by the country's volatile history.³ It is argued that the country's middle class is composed of the educated elite – with college education and the entrepreneurs in both formal and informal sectors.

South Africa: A new middle class emerging

After some years of sustained economic growth, South Africa has developed a sizable black middle class which is estimated to have more spending power than the country's white population.⁴ The black middle class has mainly emerged through a deliberate government program called the Black Economic

Empowerment (B.E.E) initiated after 1994 first democratic elections. A study carried out by Statistics South Africa profiling the South African middle class households based on a set of aspects of material standard of living that are used to define a middle class standard of living found a modest increase from 23 percent to 26 percent between 1998-2000 and 2004-2006. The material middle class standard of living include: residing in formal housing with following facilities: water tap in the residence, flush toilet, electricity or gas as main cooking source, telephone landline or cell phone.

Tunisia: Some businesses are focusing more on the middle class

A number of companies across Africa are recognizing that the Middle Class is their future. The Arab Tunisian Bank (ATB) has observed that competition is very tough for the 4 percent to 10 percent of the population in the upper class (the rich), so the bank is focusing more attention on the middle class.⁴ ATB is consequently targeting the youth and designing products that suit this group of customers including expanding the network of banking services.

Nigeria: The rise of the middle class in Nigeria

Nigeria's new middle class has emerged along with expansion of the private sector in industries like banking, telecommunications and services, centered in urban areas, particularly Lagos.⁵ The purchasing power of the new middle class in Nigerians can be observed at some shopping malls that have recently been opened in the country. A study carried out by the National Bureau of Statistics in 2007 estimated that Nigeria's middle class accounted for 30 percent of the population.

¹ Meldrum, 2010.

² Estey, 2010.

³ Johnson, 2010.

⁴ Brulliad, 2010.

⁵ Statistics South Africa, 2009.

5 Factors Driving the Growth of the Middle Class

5.1 Economic growth is critical to both poverty reduction and the rise of the middle class, but reducing income inequality also plays a key role in the rise of a middle class.

5.2 Africa's middle class is strongest in countries that have a robust and growing private sector as many middle class individuals tend to be local entrepreneurs. In a number of African countries, a new middle class has emerged due to opportunities offered by the private sector.

5.3 In addition to economic growth and reducing inequality, two other factors are

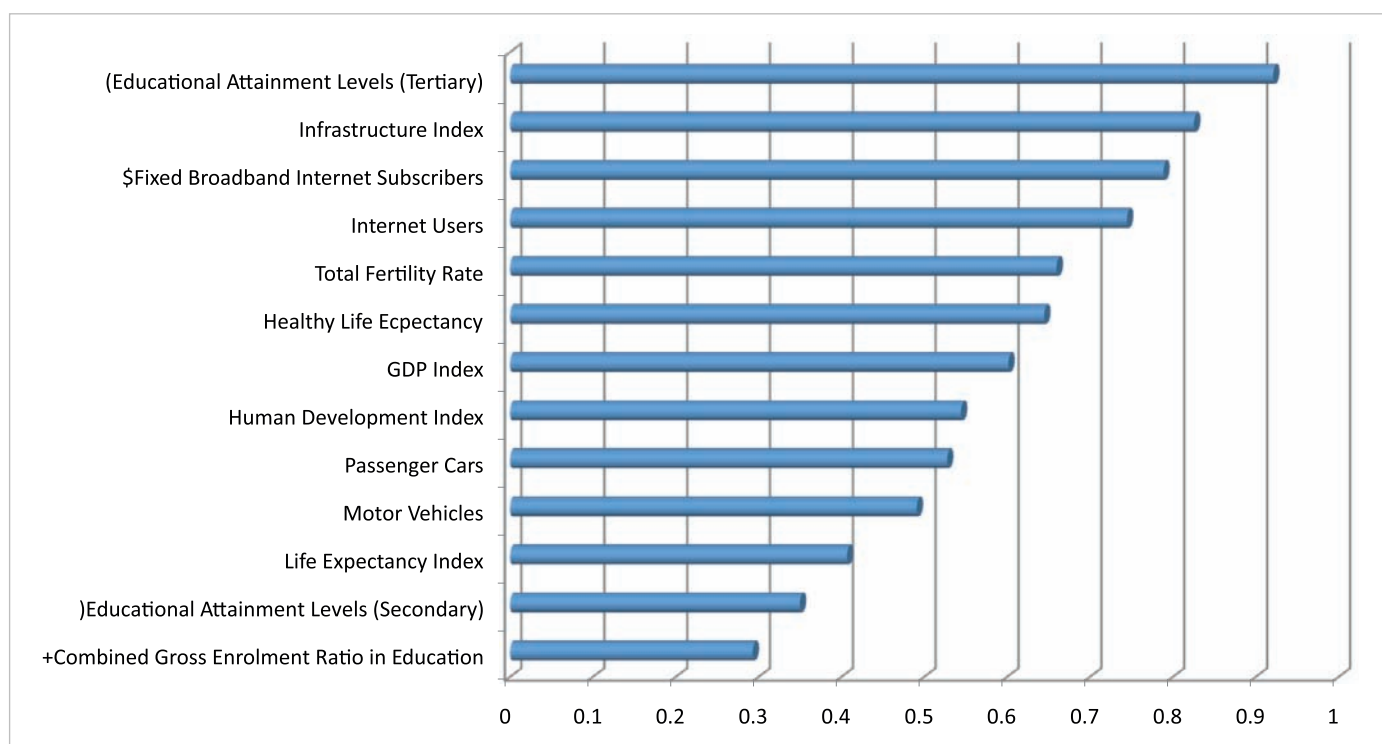
central to the creation and sustenance of a middle class: (i) stable, secure, well-paid jobs with good benefits, and (ii) higher tertiary education. A large portion of the middle class has jobs providing stable incomes in comparison to the largely self-employed poor. The experience of fostering the creation of large middle classes in other countries, such as the United States, also underscores the importance of education in the process. The enhancement of a country's human resources through greater access to education and improved healthcare show a positive correlation with the size of the middle class (Chart 16). Countries that have higher levels of educational attainment, improved health and human development in general tend to have larger middle class populations than those that do not. In particular, access

to tertiary education displays a strong positive correlation to middle class growth (see Chart 16).

5.4 Similarly, countries with much more developed infrastructure tend to have larger middle class populations. This could be largely due to the fact that such countries have a more competitive economic environment that attracts investment and helps to create more stable employment and income-generating opportunities taken up by the middle class.

5.5 Africa's emerging consumers are likely to assume the traditional role of the US and European middle classes as global consumers, and to play a key role in rebalancing the African economy. Consumer

Chart 16: Correlation of Middle Class Size and Characteristics



spending in Africa, primarily by the middle class, was surprisingly resilient during the recession. It reached an estimated \$680 billion in annual expenditures in 2008 (based on per capita consumption of more than \$2) - or nearly a quarter of Africa's GDP based on 2008 purchasing power parity. Assuming consumption expenditure in Africa continues to grow at roughly the same rate as the past 20 years, by 2030 Africa will likely reach \$2.2 trillion in annual expenditures and comprise about 3% of worldwide consumption.

5.6 North Africa displays bigger spending power because of their large middle class population. This provides an opportunity for North Africa to accelerate its shift from too much reliance on export-oriented and investment-led growth to domestic demand-led growth, while supporting the development of its middle class by raising the share of household income in GDP directly through macroeconomic policy changes.

5.7 The continued rise of Africa's middle class will require governments to introduce policies that bolster the incomes of those already in the middle class, and social policies to expand the middle class, such as through greater spending on education and health. Over the next 20 years, with the appropriate middle-class friendly policies

focused on human capital development and better jobs, Africa can continue and even accelerate the reduction of poverty and improvements in the living conditions of the population. Projections suggest that by 2030 much of Africa will have attained lower and middle class majorities. Ethiopia, Nigeria and South Africa are expected to provide the largest number of new middle class, and smaller countries will see faster or slower emergence depending on the absorption of their resource base and labor forces into higher value added supply chains.

6 Conclusion

6.1 Strong economic growth in the past two decades has helped reduce poverty in Africa and increased the size of the middle class. Although the growth in Africa's middle class, has not been very robust, it has nonetheless been noticeable and contributed to increased domestic consumption in many African countries, a development that could help to foster private sector growth in African countries. Sales of refrigerators, television sets, mobile phones, motors and automobiles have surged in virtually every country in recent years. Possession of cars and motor cycles in Ghana, for example, has increased by 81% since 2006. As such, the middle class is helping to foster private sector growth in

Africa as they offer a key source of effective demand for goods and services supplied by private sector entities.

6.2 The middle class is also helping to improve accountability in public services through more vocal demands for better services. The middle class is better educated, better informed and has greater awareness of human rights. It is the main source of the leadership and activism that create and operate many of the non-governmental organizations that push for greater accountability and better governance in public affairs, a position that augurs well for creating a suitable environment for growth and development.

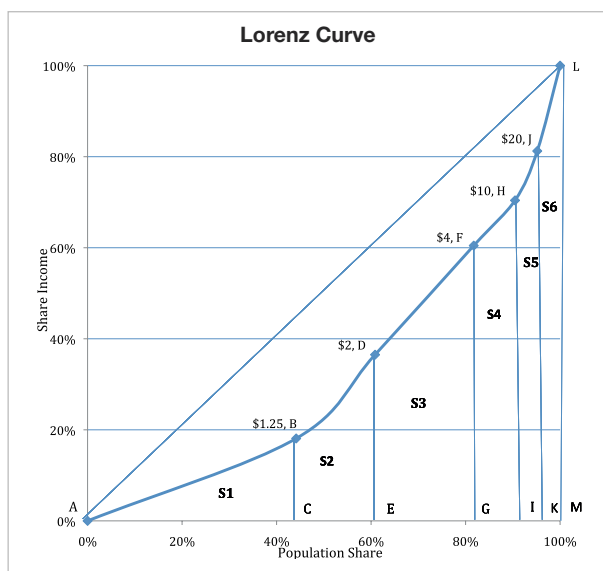
6.3 Sustained policies that foster strong, sustained and shared growth, improved infrastructure, enhanced human resource development, promotion of private sector growth and increased accountability and better governance of public affairs, also foster middle class growth. While recent studies provide no hard evidence of a significant direct middle class effect on growth, it does suggest that policies that include the promotion of middle class growth are more cost-effective and generate more long-term poverty reducing benefits than policies that focus solely on addressing problems of the poor.

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appendices

Box 2: Methodological Approach



Where S_i is the area of the trapezoid under the Lorenz curve. AC and AE represent the proportions of the population associated with the first and the second poverty lines. Similarly, BC and DE represent the shares of income associated with people at and below the first and the second poverty lines.

Step 2: For each African country and each year, we estimate, we estimate points F, H and J corresponding respectively to the income levels of \$ 4/day, \$ 10/day and \$ 20/day, which satisfy the gini coefficient for a given country and year. This is done by solving for the 3 points from the constrained optimization system of equations represented by equation (1). Using the trapezoidal method, this corresponds to estimating the area below the Lorenz curve. This system allows us to identify the position of the three points so that the desired equation (1) is satisfied. The system is presented as follows:

$$\left\{ \begin{array}{l} S_1 = \int_C^A f(x)dx \\ S_2 = \int_E^C f(x)dx \\ S_3 = \int_G^E f(x)dx \\ S_4 = \int_I^G f(x)dx \\ S_5 = \int_K^I f(x)dx \\ S_6 = \int_M^K f(x)dx \end{array} \right. \xrightarrow{\text{Trapezoidal method}} \left\{ \begin{array}{l} S_1 = \frac{AC * BC}{2}; S_1 \text{ is given} \\ S_2 = CE * \frac{(BC + DE)}{2}; S_2 \text{ is given} \\ S_3 = EG * \frac{(DE + FG)}{2} \\ S_4 = GI * \frac{(FG + HI)}{2} \\ S_5 = IK * \frac{(HI + JK)}{2} \\ S_6 = KM * \frac{(JK + LM)}{2} \end{array} \right.$$

Methodological Approach

The following two steps are used to obtain three unique values of (\$4, \$10 and \$20) which allow us to generate an Africa Lorenz curve (Chart 17). The curve also provides us information on the proportion and size of the population falling under these income levels as well as their income shares.

Step 1: Gini coefficients for many African countries are provided covering a number of years. For some years where they are not available, we estimate them assuming a linear trend between two observations. The gini coefficient can be written according to the Lorenz curve as follows:

$$Gini = 1 - 2 \sum_{i=1}^6 S_i \quad (1)$$

With $f(x)$ is the Lorenz curve.

After identifying the three points for each sample country, to the results are aggregated at the Africa level using a double weighting approach - the share of the country population in the total population sample and the share of the country income in the total income sample.

This allows us to generate an Africa Lorenz curve (Chart 17) which also provides us information on the proportion and size of the population falling under certain income levels as well as their income shares.

The estimated values for 2010 were derived by using trends based on the last two values of Gini coefficient corresponding to the household surveys from PovCal.

Chart 17: African Lorenz Curve, in 2010

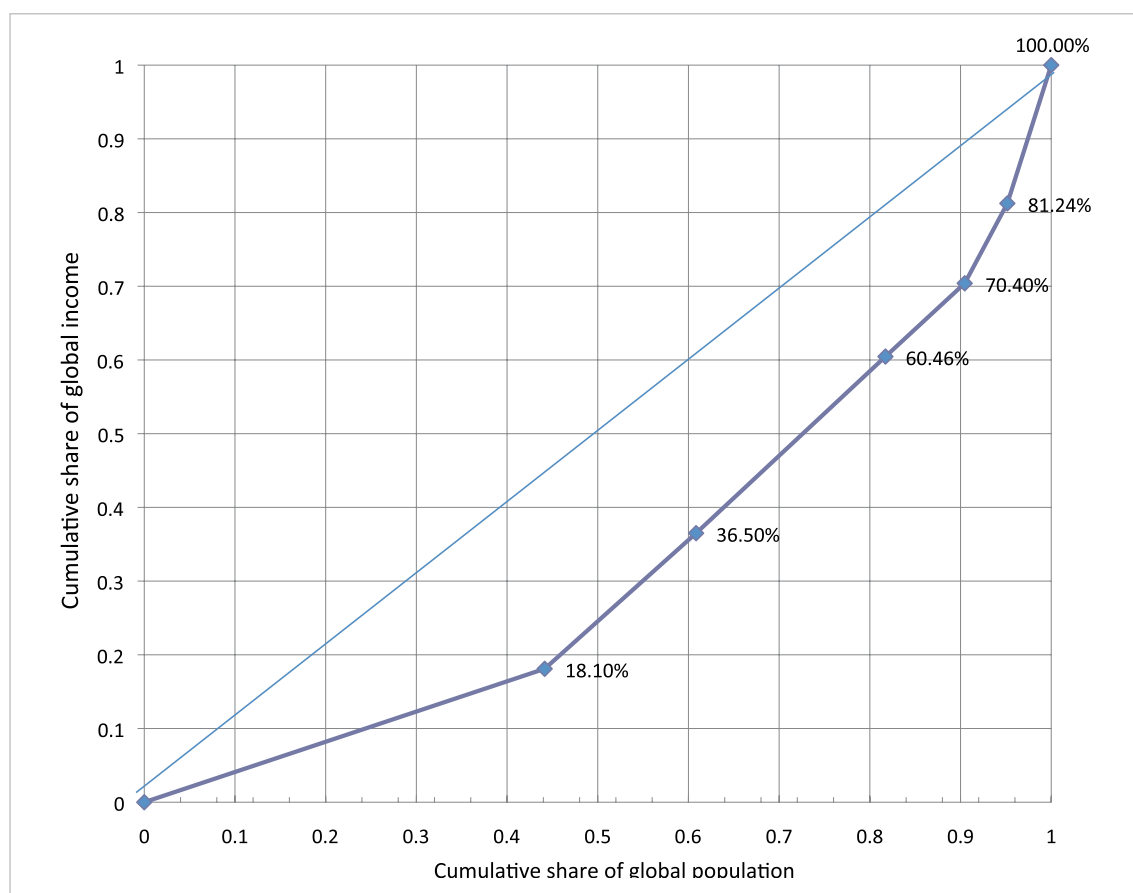


Chart 18: Middle Class Distribution by Subclasses

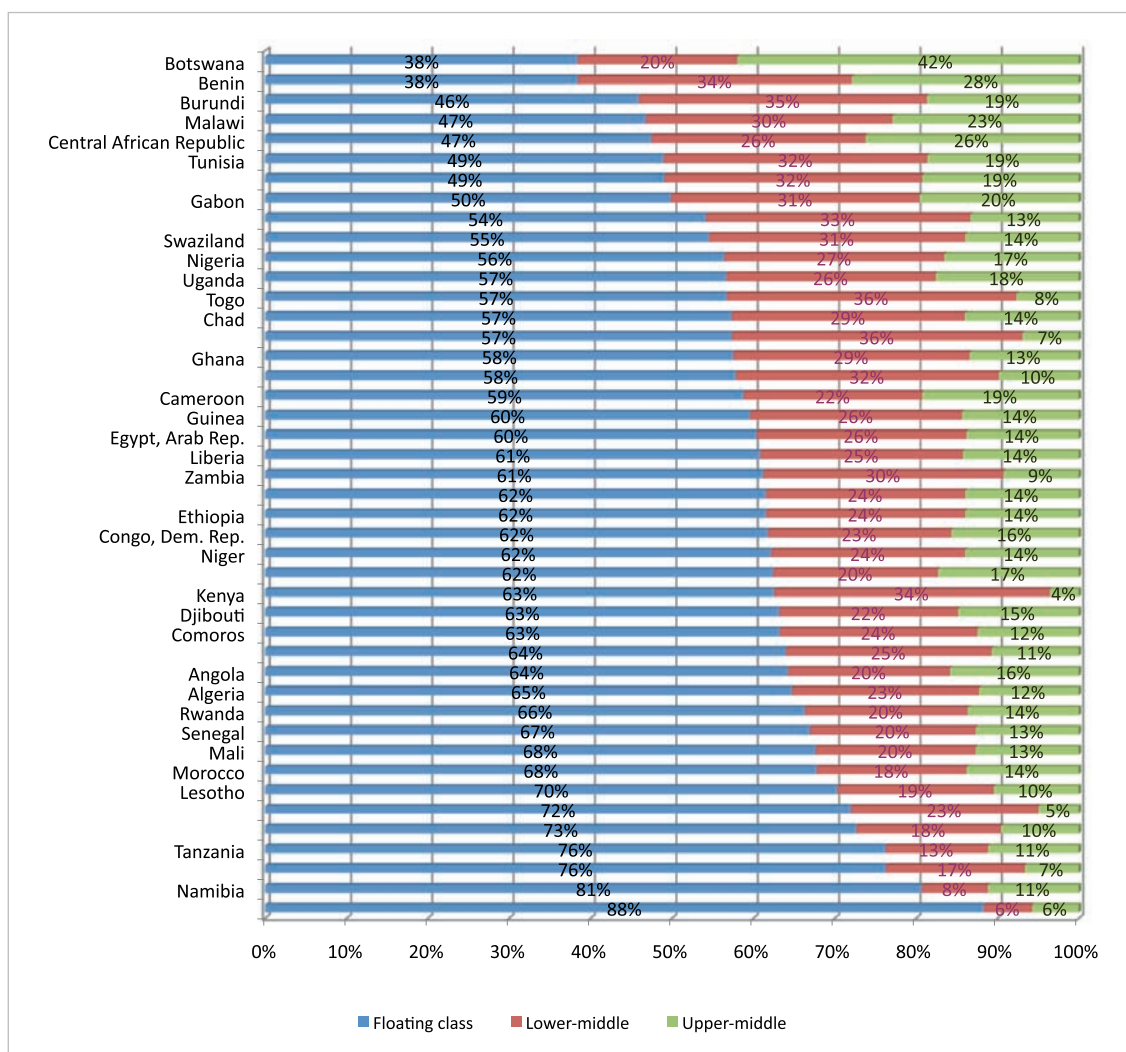


Chart 19: GNI per capita, PPP (current international \$), 2008

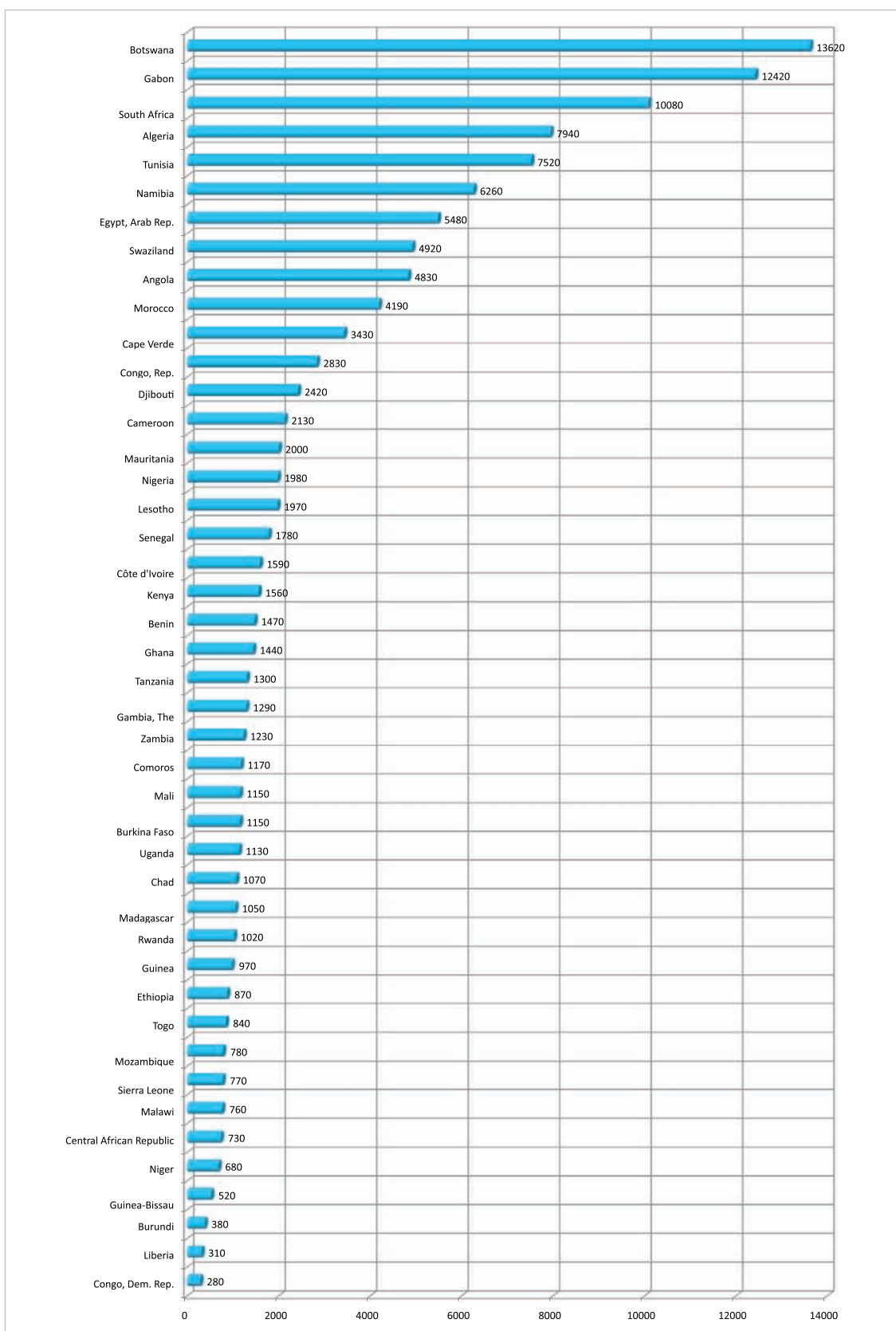


Chart 20: The size of Poor class, in % of population

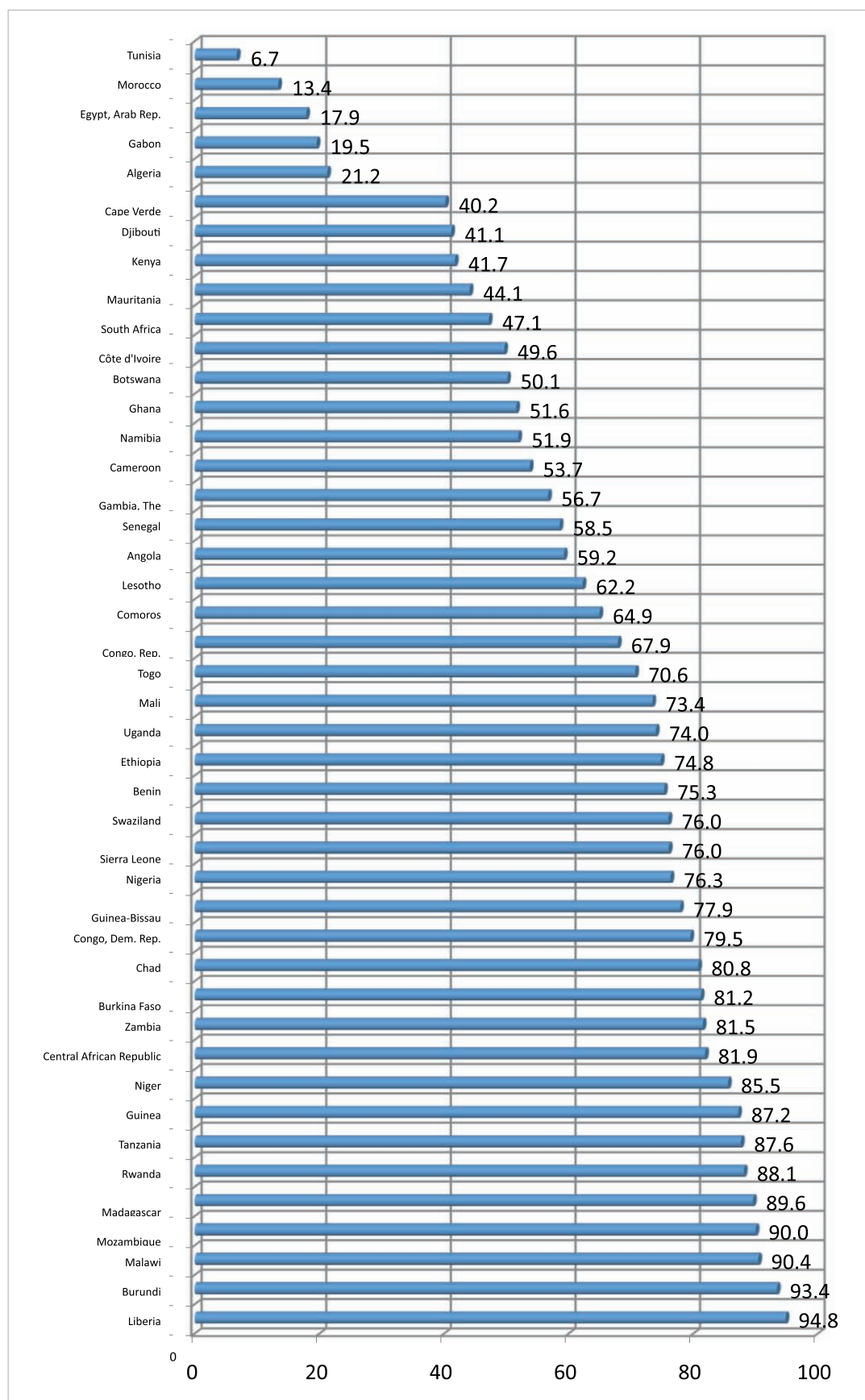


Table 2: Summary of Population, Class Size, by Region (1990 and 2008 Based on Household Survey Means)

Region	Total Population (million)	Population (%)			Aggregate annual income/expenditures (2005 PPP \$ billion)			
		Poor (<\$2 per person per day)	Poor (\$2-\$20) per person per day	High (>\$20 per person per day)	Poor (<\$2 per person per day)	Poor (\$2-\$20) per person per day	High (>\$20 per person per day)	Total
		1990						
Africa*	584	69	27	4	77	225	64	366
Sub-Saharan Africa	274.8	75	24	1	70	109	44	224
Middle East and North Africa	162.3	18						
	80	2	16	247	39	303		
Developing Asia	2,692.2	79	21	0	843	721	42	1,605
Developing Europe	352.3	12	84	4	23	638	141	802
Latin America and Caribbean	352.5	20	71	9	31	641	480	1,153
OECD	639.0	0	24	76	0	735	9,636	10,371

Region	Total Population (million)	Population (%)			Aggregate annual income/expenditures (2005 PPP \$ billion)			
		Poor (<\$2 per person per day)	Poor (\$2-\$20) per person per day	High (>\$20 per person per day)	Poor (<\$2 per person per day)	Poor (\$2-\$20) per person per day	High (>\$20 per person per day)	Total
		2008						
Africa*	910	62	33	5	110	449	121	680
Sub-Saharan Africa	393.5	66	33	1	100	206	69	376
Middle East and North Africa	212.8	12	86	3	14	365	66	445
Developing Asia	3,383.7	43	56	1	696	3,285	350	4,331
Developing Europe	356.6	2	87	11	4	974	425	1,403
Latin America and Caribbean	454.2	10	77	13	22	1,008	924	1,953
OECD	685.4	0	16	84	0	542	12,617	13,159

Notes: Africa = All countries without Eritrea, Libya, Mauritius, São Tomé and Príncipe, Seychelles, Somalia, Sudan, Zimbabwe; Sub-Saharan Africa = Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Ethiopia, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Uganda; Middle East and North Africa = Algeria, Djibouti, Egypt, Iran, Jordan, Morocco, Tunisia, Yemen; Developing Asia = Armenia, Azerbaijan, Bangladesh, Cambodia, People's Republic of China, Georgia, India, Indonesia, Kazakhstan, Kyrgyz Republic, Lao People's Democratic Republic, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Tajikistan, Thailand, Turkmenistan, Uzbekistan, Viet Nam; Developing Europe = Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russian Federation, Turkey, Ukraine; Latin America and Caribbean = Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Peru, Uruguay, Venezuela; OECD = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Korea, Luxembourg, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, United Kingdom, United States.

Sources: PovcalNet Database, AfDB Statistics Department estimates for Africa and Asian Development Bank.

Table 3: Summary of Middle Class in Africa by sub-classes in 2008

Year=2008	Floating Class		Lower-middle		Upper-middle		Total	
Countries	% of pop	Pop (million)	% of pop	Pop (million)	% of pop	Pop (million)	% of pop	Pop (million)
Algeria	49.2	16.9	18.0	6.2	9.3	3.2	76.6	26.3
Angola	24.9	4.5	7.1	1.3	6.1	1.1	38.1	6.9
Benin	6.9	0.6	5.9	0.5	4.8	0.4	17.7	1.5
Botswana	18.3	0.4	9.4	0.2	20.0	0.4	47.6	0.9
Burkina Faso	10.2	1.6	2.3	0.3	0.9	0.1	13.3	2.0
Burundi	2.4	0.2	1.9	0.2	1.0	0.1	5.3	0.4
Cameroon	23.1	4.4	8.6	1.6	7.5	1.4	39.2	7.5
Cape Verde	29.7	0.1	11.7	0.1	5.0	0.0	46.4	0.2
Central African Republic	6.9	0.3	3.8	0.2	3.8	0.2	14.6	0.6
Chad	10.3	1.1	5.1	0.6	2.5	0.3	17.9	2.0
Comoros	15.7	0.1	6.0	0.0	3.1	0.0	24.8	0.2
Congo, Dem. Rep.	7.7	4.9	2.8	1.8	1.9	1.3	12.4	8.0
Congo, Rep.	22.6	0.6	7.2	0.2	1.5	0.0	31.4	0.8
Côte d'Ivoire	18.2	3.8	11.8	2.4	7.1	1.5	37.1	7.7
Djibouti	25.4	0.2	8.8	0.1	5.9	0.1	40.1	0.3
Egypt, Arab Rep.	48.2	39.3	20.6	16.8	11.0	9.0	79.7	65.0
Ethiopia	13.2	10.7	5.3	4.2	3.0	2.4	21.5	17.4
Gabon	37.6	0.5	23.0	0.3	14.7	0.2	75.4	1.1
Gambia, The	22.0	0.4	12.3	0.2	3.7	0.1	37.9	0.6
Ghana	26.8	6.3	13.5	3.2	6.2	1.5	46.6	10.9
Guinea	6.3	0.6	2.8	0.3	1.5	0.1	10.6	1.0
Guinea-Bissau	10.2	0.2	6.4	0.1	1.2	0.0	17.8	0.3
Kenya	28.10	10.83	15.21	5.86	1.59	0.62	44.89	17.31
Lesotho	26.3	0.5	7.2	0.1	3.9	0.1	37.4	0.8
Liberia	2.9	0.1	1.2	0.0	0.7	0.0	4.8	0.2
Madagascar	5.6	1.1	1.8	0.4	1.6	0.3	9.0	1.7
Malawi	4.0	0.6	2.6	0.4	2.0	0.3	8.5	1.3
Mali	17.0	2.2	4.9	0.6	3.2	0.4	25.1	3.2
Mauritania	37.9	1.2	2.5	0.1	2.5	0.1	42.8	1.4
Morocco	57.3	18.1	15.6	4.9	11.7	3.7	84.6	26.7
Mozambique	6.9	1.5	1.7	0.4	0.9	0.2	9.4	2.1
Namibia	38.2	0.8	3.8	0.1	5.3	0.1	47.4	1.0
Niger	8.7	1.3	3.3	0.5	2.0	0.3	14.0	2.1
Nigeria	12.9	19.5	6.2	9.3	3.8	5.7	22.8	34.5
Rwanda	5.1	0.5	1.5	0.2	1.1	0.1	7.7	0.8
Senegal	23.9	2.9	7.3	0.9	4.5	0.6	35.7	4.4
Sierra Leone	11.4	0.6	4.6	0.3	2.6	0.1	18.6	1.0
South Africa	23.4	11.6	14.0	7.0	5.7	2.8	43.2	21.4
Swaziland	11.2	0.1	6.5	0.1	2.9	0.0	20.6	0.2
Tanzania	9.2	3.9	1.5	0.6	1.3	0.6	12.1	5.2
Togo	11.6	0.7	7.3	0.5	1.6	0.1	20.4	1.3
Tunisia	43.9	4.5	29.0	2.9	16.6	1.7	89.5	9.1
Uganda	10.6	3.4	4.8	1.5	3.3	1.0	18.7	5.9
Zambia	8.8	1.1	4.3	0.5	1.3	0.2	14.4	1.8
Total	20.0	184.76	8.3	77.87	4.8	42.37	33.0	305.01

Notes: Floating Class=\$2-\$4; Lower-Middle =\$4-\$10 and Upper-Middle=\$10-\$20.

Source: ESTA Estimates.

Table 4: Summary of Middle Class in Africa by Sub-Classes in 2008, without the Floating Class

Year=2008	Lower-middle		Upper-middle		Total Middle Income without floating class	
Countries	% of pop	Pop (million)	% of pop	Pop (million)	% of pop	Pop (million)
Algeria	18.0	6.2	9.3	3.2	27.3	9.4
Angola	7.1	1.3	6.1	1.1	13.2	2.4
Benin	5.9	0.5	4.8	0.4	10.8	0.9
Botswana	9.4	0.2	20.0	0.4	29.3	0.6
Burkina Faso	2.3	0.3	0.9	0.1	3.2	0.5
Burundi	1.9	0.2	1.0	0.1	2.9	0.2
Cameroon	8.6	1.6	7.5	1.4	16.1	3.1
Cape Verde	11.7	0.1	5.0	0.0	16.7	0.1
Central African Republic	3.8	0.2	3.8	0.2	7.7	0.3
Chad	5.1	0.6	2.5	0.3	7.7	0.8
Comoros	6.0	0.0	3.1	0.0	9.1	0.1
Congo, Dem. Rep.	2.8	1.8	1.9	1.3	4.7	3.1
Congo, Rep.	7.2	0.2	1.5	0.0	8.8	0.2
Côte d'Ivoire	11.8	2.4	7.1	1.5	18.9	3.9
Djibouti	8.8	0.1	5.9	0.1	14.8	0.1
Egypt, Arab Rep.	20.6	16.8	11.0	9.0	31.6	25.7
Ethiopia	5.3	4.2	3.0	2.4	8.2	6.7
Gabon	23.0	0.3	14.7	0.2	37.8	0.5
Gambia, The	12.3	0.2	3.7	0.1	16.0	0.3
Ghana	13.5	3.2	6.2	1.5	19.8	4.6
Guinea	2.8	0.3	1.5	0.1	4.3	0.4
Guinea-Bissau	6.4	0.1	1.2	0.0	7.6	0.1
Kenya	15.2	5.86	1.6	0.62	16.8	6.48
Lesotho	7.2	0.1	3.9	0.1	11.1	0.2
Liberia	1.2	0.0	0.7	0.0	1.9	0.1
Madagascar	1.8	0.4	1.6	0.3	3.4	0.6
Malawi	2.6	0.4	2.0	0.3	4.5	0.7
Mali	4.9	0.6	3.2	0.4	8.1	1.0
Mauritania	2.5	0.1	2.5	0.1	5.0	0.2
Morocco	15.6	4.9	11.7	3.7	27.2	8.6
Mozambique	1.7	0.4	0.9	0.2	2.6	0.6
Namibia	3.8	0.1	5.3	0.1	9.1	0.2
Niger	3.3	0.5	2.0	0.3	5.3	0.8
Nigeria	6.2	9.3	3.8	5.7	9.9	15.0
Rwanda	1.5	0.2	1.1	0.1	2.6	0.3
Senegal	7.3	0.9	4.5	0.6	11.8	1.4
Sierra Leone	4.6	0.3	2.6	0.1	7.1	0.4
South Africa	14.0	7.0	5.7	2.8	19.8	9.8
Swaziland	6.5	0.1	2.9	0.0	9.4	0.1
Tanzania	1.5	0.6	1.3	0.6	2.9	1.2
Togo	7.3	0.5	1.6	0.1	8.8	0.6
Tunisia	29.0	2.9	16.6	1.7	45.6	4.6
Uganda	4.8	1.5	3.3	1.0	8.1	2.6
Zambia	4.3	0.5	1.3	0.2	5.6	0.7
Total	8.3	77.87	4.8	42.37	13.1	120.24

Notes: Lower-Middle =\$4-\$10 and Upper-Middle=\$10-\$20.

Source: ESTA Estimates.

